REMARKS

New claim 8 has been added to claim a preferred embodiment of Applicants' invention. Support for new claim 8 can be found on page 16, lines 15-26 of the specification.

The present invention as set forth in claim 1, relates to a method for producing an alcohol and/or a ketone from an alkene [for example, methylethylketone (MEK)], wherein a catalyst is circulated between a fluid bed reactor and a regenerator, and wherein a stripper is provided on the way from the regenerator to the reactor.

One of the more important advantages of the present invention is that this method can greatly increase the selectivity of a desired product by providing the stripper on the line passing to the reactor from the regenerator, wherein the regenerated catalyst is stripped to remove molecular oxygen which is adsorbed to, or entrained by the catalyst, and to reduce the molecular oxygen which is carried to the reactor and increases by-products due to excessive oxidation.

In the above Office Action the Examiner rejected claims 1-7 under 35 U.S.C. §103(a) for being obvious over GB 1324717, hereafter GB'717.

GB'717 teaches a process for preparing ketones (e.g., acetone or butanone) from corresponding olefins (e.g., propylene or butane), where the olefins are converted over a catalyst of molybdenum oxide together with tin oxide, and where the catalyst is regenerated in the presence of an oxygen-containing gas. The catalyst can be circulated between a reaction zone and a regeneration zone. Steam and/or an inert gas can be passed over the catalyst before and/or after contact with the olefin-free mixture (i.e., the regeneration gas containing oxygen). Substantially no oxygen should be

present in the gas mixture since the presence of oxygen has a deleterious effect on the reaction.

The Examiner is of the opinion that because the catalyst is contacted with steam or an inert gas, this is essentially a stripping step. Therefore, it would have been obvious to a person skilled in the art to arrive at the present invention.

Applicants disagree with the Examiner's observation because the contacting step taught by GB'717 is not essentially a stripping step for the following reasons.

(1) The term "stripping" generally means removing volatile substances which are adsorbed to or entrained by a catalyst. That is, in the instant case, stripping means removing molecular oxygen which is adsorbed to or entrained by the catalyst. On the other hand, GB'717 is silent about the effects of removing molecular oxygen which is adsorbed to or entrained by a catalyst and the necessity of removing such molecular oxygen. In other words, the reference does not teach the technical meaning and advantageous effects of stripping as specified in the present application.

(2) Various specific conditions are required for bringing a catalyst into contact with an inert gas for stripping it. It would be impossible to remove molecular oxygen which is adsorbed to or entrained by a catalyst simply by passing an inert gas over the catalyst. That is, in order to conduct the stripping effectively, it would at least be necessary to provide a stripper on the way from a regenerator to a reactor as recited in the present claims. However, GB'717 does not teach the necessity of such a stripper or any specific conditions for stripping.

As described above, the present invention is a method for producing an alcohol and/or a ketone from an alkene, wherein a catalyst is circulated between a fluid bed

reactor and a regenerator, and wherein a stripper is provided on the way from the regenerator to the reactor. In the stripper, the regenerated catalyst from the regenerator is stripped to remove molecular oxygen adsorbed on the catalyst surface and molecular oxygen in the gas phase entrained by the catalyst.

Even if the resulting effect of molecular oxygen adsorbed to the catalyst is the same as molecular oxygen in the vapor phase, which reduces the selectivity of the desired product, it is believed that there is a substantial difference in reactivity of the molecular oxygen adsorbed and the molecular oxygen in the vapor phase. That is because the molecular oxygen adsorbed is activated on the surface of the catalyst. Furthermore, the molecular oxygen adsorbed can have a larger influence on the reaction even in an amount which is less than the molecular oxygen in the vapor phase.

In contrast, GB'717 just teaches the influence of oxygen in the gas mixture containing the olefin and steam. It does not teach the influence of molecular oxygen adsorbed to the catalyst or the necessity of desorption of the adsorbed molecular oxygen from the catalyst.

GB'717 teaches that steam and/or an inert gas can be passed over the catalyst before and/or after the contacting with the olefin-free mixture. The Examiner argues that such contacting of the catalyst with steam or an inert gas is essentially a stripping step.

However, in a fluid bed reaction process, the contacting of a catalyst with steam and/or an inert gas can be carried out for various reasons in addition to stripping. In a fluid bed reaction process where a catalyst is circulated between a reactor and a regenerator, the regenerated catalyst from the regenerator can be transported to the

reactor via a recycle line "b" as shown in Fig. 1 of the present application. There the catalyst is generally lifted up to a feed entry point by a lift gas or carrier gas. The catalyst from the reactor is also transported to the regenerator via a catalyst take-out line "a" as shown in Fig. 1 by a lift gas or carrier gas. As is known to those skilled in the art, usually an inert gas is used as the lift gas or carrier gas. In other words, the catalyst necessarily contacts the inert gas used as the lift gas or carrier gas both after and before the regeneration of the catalyst in the circulation system.

Moreover, as demonstrated in Comparative Examples 1 and 2 of the present specification, a regenerated catalyst, which is simply contacted with an inert gas used as lift gas or carrier gas in the recycle line, has a low selectivity of the desired product. Therefore, such contacting of the catalyst with inert gas just in the recycle line is not enough to reduce the amount of oxygen in the reactor. In other words, improvement in the selectivity of the desired product by decreasing the amount of oxygen in the reactor, as in the present invention, is obtained only by providing the stripper in which the catalyst can stay sufficiently long for exposure to the inert gas. Sufficient conditions for stripping to remove the molecular oxygen adsorbed to the catalyst surface are set forth in new claim 8.

In contrast, GB'717 neither discloses or suggests <u>any conditions</u> required for a stripping step, wherein volatile substances adsorbed to or entrained by the catalyst are removed. Thus the contacting of the catalyst with steam and/or an inert gas in the reference would essentially not be considered a stripping step to remove oxygen adsorbed to the catalyst. Therefore a person skilled in the art would not have thought to use a stripper to remove molecular oxygen adsorbed to the catalyst in addition to the

molecular oxygen in the gas phase entrained by the catalyst from the teachings of this reference.

Accordingly, it is believed that none of claims 1-7 or new claim 8 is obvious from GB'717. Its withdrawal as a ground of rejection of the claims under §103(a) is therefore requested.

It is believed claims 1-8 are in condition for allowance.

In view of the foregoing amendments and remarks, Applicant respectfully requests reconsideration and reexamination of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, L.L.P.

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By: _____

Arthur S. Garrett
Reg. No. 20,338
Tel; 202-408-4091

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